



Short report

Chemical submission to commit robbery: A series of involuntary intoxications with flunitrazepam in Asian travellers in Brussels



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ABSTRACT

Between January 17, 2003 and August 29, 2003, the Emergency Department admitted a patient who had been surreptitiously intoxicated and robbed of his valuables every Friday. The first cases were considered anecdotal, but criminal activity was rapidly suspected. The cohort includes 16 male Asian patients aged 28–50 years. All the victims had just arrived in Brussels through one of the main rail station of the town and were admitted via the emergency ambulance service from different locations in the centre of Brussels around the CHU Saint-Pierre Hospital. Haemodynamic parameters upon admission were within normal limits. The Glasgow Coma Scale was equal or higher than 9/15 in 14 of the 16 victims. Toxicology screening obtained in 12 patients revealed the presence of flunitrazepam, which was further quantified at levels ranging from 21 to 75 µg/l. One of the Japanese patients, who returned to Belgium afterwards for professional reasons, was approached by the police and accepted to press charges. This allowed the police to investigate and send undercover agents to the railway station on Friday afternoons and evenings. They found a person who was offering welcome cookies to Asian travellers. He arrived from Amsterdam and returned once his crime was committed.

Flunitrazepam is well known as a rape drug. We report a series of victims in whom flunitrazepam was used to facilitate robbery.

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1. Introduction

Flunitrazepam (Rohypnol[®], Roche, Basel, Switzerland), a benzodiazepine, is ten times more potent than diazepam. Sometimes called “the forget pill” or “the date rape pill”, this drug has been banned in the U.S. due to certain properties, such as disinhibition, anterograde amnesia, and annihilation of the will. However, it is still used in approximately 60 countries in psychiatry (anxiety, insomnia) or for a conscious sedation, such as before endoscopy.^{1,2}

Flunitrazepam can be swallowed, chewed, or dissolved under the tongue. It may also be in liquid form, crushed, snorted, smoked and injected. It is tasteless, colourless and odourless, and can easily

be mixed with any drink.^{3,4} It potentiates the effects of alcohol or cannabis. Its effects begin within 30 min after ingestion and peak after 1–2 h.

Flunitrazepam is almost entirely metabolized in active compounds 7-amino-flunitrazepam and N-desmethyl-flunitrazepam, but the latter is less active than flunitrazepam. After ingestion of 2 mg, the concentrations of N-desmethyl-flunitrazepam are less than the minimal active concentrations for this metabolite. 80% of the molecule is excreted in the urine, mainly as 7-amino-flunitrazepam. The half-life of flunitrazepam and 7-amino-flunitrazepam is 10–16 h and that of N-desmethyl-flunitrazepam is 28 h. After ingestion of such a dose, Flunitrazepam and metabolites are detectable in the blood within 24 h and until 96 h in the urine.⁵

Disinhibition, cognitive impairments, slurred speech, unsteady gait and amnesia are typical effects reminiscent of alcohol poisoning.

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We present a series of flunitrazepam poisonings with a motive of theft.

Unlike its use as a date rape drug, theft under the influence of flunitrazepam is not commonly described.

2. Materials and methods

We analyzed a period extending from January 17, 2003 to August 29, 2003, dates of the first and last cases of surreptitious intoxication seen in our Emergency Department. Since all the cases occurred on Friday afternoon, we made contact with the reference toxicology laboratories of the city to identify other potential cases with similar circumstances admitted in other Emergency Departments: no additional case was identified.

For each case, we collected the following data on admission:

- gender, age, geographical location;
- haemodynamic parameters: blood pressure (BP) and heart rate (HR);
- cognitive status assessed by the Glasgow Coma Score (GCS);
- any clinical sign suggestive of drug intoxication;
- the flunitrazepam blood level was obtained in 12 patients

We also note the conditions of discharge from the emergency department or the total length of hospitalization.

3. Results

Two examples of observations that we experienced in the ED of the Saint-Pierre Hospital are reported below.

A young man of Asian origin was found in a park in central Brussels and brought to the ED by the emergency ambulance service. He was sleepy. When he recovered, he remembered accepting a cookie offered by a man at the Brussels railway station and then having felt dizzy with headache.

Another Asian tourist had collapsed in the city centre. On admission, he was disoriented, drowsy and had a very unsteady gait. He fell asleep. Five hours later, he disappeared from the ED.

Similar cases occurred each Friday and the scenario remained the same: 16 patients were identified between January 17 and August 29, 2003. Table 1 shows the general ethnicity of victims of flunitrazepam intoxication.

All the patients were admitted separately on a Friday afternoon or evening. The emergency ambulance service (100) took care of 15 patients in the centre of the town and brought them to our ED. An individual presented spontaneously in the hospital. Apart from a patient admitted for injury due to syncope, all the others were

Table 2

Clinical data and orientation.

Patient	BPs mm Hg	BPD mm Hg	HR /min	GCS /15	Observation	Orientation
						1. Discharge 2. Hospitalization 3. Leaving against medical advice
1	–	–	–	14	24 h	1
2	–	–	–	–	12 h	1
3	–	–	–	–	08 h	3
4	12	8	80	14	09 h	3
5	10	6	78	12	05 h	3
6	12	6	100	11	06 h	3
7	13	5	60	–	05 h30	1
8	11	6	70	14	03 h	1
9	–	–	–	13	24 h	1
10	8	5	45	12	24 h	2
11	10	6	70	13	15 h	2
13	10	6	70	13	03 h30	1
14	12	8	58	12	17 h	2
15	10	8	86	9	03 h	1
16	10	6	70	14	02 h20	1

BPs: systolic blood pressure, GCS: Glasgow coma scale, BPD: diastolic blood pressure, Observation: observation period, HR: cardiac frequency, – : no available data.

admitted due to faintness in the streets. The victims had various nationalities, but all were Asian and male aged 20–50 years. Ten patients were under 30 years. Table 2 presents the haemodynamic and neurological status, as well as the mode of discharge from the ED. The BP was normal to low, with an average of 109/66 mm Hg. One patient had a more marked hypotension (80/50 mm Hg) with a sinus bradycardia at 45/min. Heart rate ranged from 58 to 100/min with an average of 72/min. From a neurological perspective, 14 patients were drowsy but reactive to vocal stimuli and two patients responded to pain stimulation. The GCS was evaluated in 13 patients and ranged from 9 to 14/15. The score at 9/15 was determined in a patient with an alcohol blood level at 0.45 g/l.

After recovery, seven patients reported eating a biscuit offered by a stranger posing as a guide. One patient ate an offered sandwich. Two people described an individual as of Greek type. All patients regained consciousness in the ambulance or in the ED, with only vague memories of what happened to them.

Toxicological tests were performed in 12 cases in the toxicology laboratory at Universitair Ziekenhuis (UZ) Brussels. Chromatography coupled with mass spectrometry was used for detection and quantitation. Flunitrazepam could be detected in all the cases, at concentrations ranging from 21 to 75 mg/l. The level of the active metabolite norflunitrazepam was not determined. Bromazepam was also measured at therapeutic concentration (24 µg/l) in the injured patient. The blood alcohol level was measured in 9 patients and proved to be moderately high (0.45 g/l) in one of them.

Facing those unusual facts, the medical team informed the judicial authorities. The judicial authorities, however, remained powerless, considering the refusal of victims to lodge a complaint. When a Japanese citizen filed a complaint several months later, investigations commenced.

After several weeks of investigation, including the use of Belgian police of Asian origin, the culprit was arrested. He was an individual Syrian national, who made the round trip from Amsterdam to Brussels every Friday to commit his crime.

The cookies involved were analyzed by the toxicology laboratory at UZ Brussels. The chocolate dough of the cookies was impregnated with flunitrazepam. One of the cookies contained 5.4 mg flunitrazepam and 1.4 mg of clonazepam.

The “cookies monster”, as he has been known, was convicted and condemned.

Table 1

Characteristics of the population.

Patient	Date	Time	Age	Nationality
1	January 17	16 h13	24	–
2	March 28	12 h57	22	–
3	April 04	23 h04	–	Japan
4	April 11	15 h23	24	U.K.
5	April 18	14 h55	28	Thailand
6	April 18	18 h39	41	U.S.A.
7	May 23	14 h53	23	Korea
8	June 13	15 h29	28	Korea
9	June 13	17 h32	–	Japan
10	June 27	14 h16	–	China
11	July 11	22 h17	33	Japan
12	July 19	0 h17	20	Korea
13	July 25	17 h42	24	China
14	August 1	15 h27	–	Japan
15	August 15	16 h49	50	Japan
16	August 29	15 h22	25	Japan

4. Discussion

A series of 16 cases of chemical submission to facilitate theft was collected using an identical procedure and inferring that it was committed by the same individual. To our knowledge, no such series has been reported until now. The collaboration among the medical team, the laboratory and the legal services led to the arrest of the serial offender.

Chemical submission is the administration of psychoactive substances to a person with criminal intent.⁶ Most of the reports are related to female rape, when a substance is given by an abuser to reduce their resistance to the sexual act. However, its use to commit robbery seems to increase.⁵ The products are typically incorporated in beverages, mainly alcoholic drinks and coffee. The use of food like pastries is not as common.

Hypnotic or anxiolytic benzodiazepines are regularly used in cases of drug submission due to their properties: at low doses, disinhibition, muscle relaxation and amnesia are observed in the majority of people without getting a marked sedative effect.^{7,8} It may act on a relatively conscious victim.⁹ By binding to specific central receptors, closely related to GABA_A and chloride channels, benzodiazepines potentiate the activity of GABA, the major inhibitory neurotransmitter of the central nervous system. These effects are potentiated by alcohol.⁶

The hypothesis most commonly put forward to explain the acute disorders of memory associated with the use of benzodiazepines is a deficit of acquisition and long-term setting. This deficit would be related to a disorder of vigilance induced by the hypnotic activity.^{5,9} The memory performances are especially degraded at an early stage by flunitrazepam. The lack of consolidation is due to the reduction of sleep latency. Learning and storing information are indeed properly made only if the duration of wakefulness is sufficient to allow memory consolidation. No correlation has been shown until now between plasma concentration and anterograde amnesia.^{5,9} The symptomatology is rather related to the dose ingested and the route of administration.⁹

The Asian patients presented here were all poisoned by biscuits impregnated with flunitrazepam. They woke up robbed, with only a vague recollection of the facts. The amnesia was present in all patients. After several hours of observation, most patients fully resumed their consciousness and were rapidly discharged from hospital, reflecting the rapid metabolism of this molecule. Only one patient had blood alcohol level at 0.45 g/l: he presented with the lowest GCS on admission. Bromazepam, at therapeutic levels, was found in another patient who presented a more pronounced hypotension than others.

Benzodiazepines are lipophilic and basic molecules.

The flunitrazepam is the fluorinated derivative of N-methyl-2 of nitrazepam. It undergoes demethylation into active desmethyl-flunitrazepam, hydroxylation, glucuronidation and reduction of its nitro group, as well as acetylation.¹⁰ Like most benzodiazepines, flunitrazepam is metabolized by cytochromes P450, CYP2C19 and CYP3A4. The genetic polymorphism modulates the metabolism and thus the tolerance to the drug from one individual to another. The CYP2C19 includes three identified genotypes: extensive metabolizers (EM) (plasma reference level), heterozygous extensive metabolizers (HEM) (plasma level doubled) and poor metabolizers (PM) (plasma level quadrupled).¹² In the Caucasian type population, only 3–5% are PM or slow hydroxylers, while this group represents 12–20% in the Asian population. Therefore, Asian people could be more susceptible to such poisoning. Even if a moderate alcohol level was observed in only one case in our series, remember that the aldehyde dehydrogenase deficiency is more common in the Asian population and also increases significantly the sensitivity to alcohol.¹³

After the first two similar cases, the attention of the medical staff has been drawn to these disturbing facts, and, despite a

“negative” urinary screening, a systematic search was conducted in blood and judicial authorities were alerted. The immunochemical methods used in the urinary tests are insensitive to low doses of benzodiazepines. More sensitive techniques (chromatography and spectrometry) are required for detection and quantification.^{14,15} The measured concentrations are all above the “therapeutic” level.

Since the victims refused categorically to complain despite our recommendations, no investigation was initiated. The cases of poisoning succeeded one another until late August 2003. The return to Belgium for business of one of the victims was the starting point. Approached by the investigators, he accepted to lodge a complaint against X, allowing an investigation of the matter. As the victims arrived at the hospital, police officers toured the area. The first attempts at apprehending the thief, using uniformed and plainclothes policemen, proved unsuccessful.

The use of Asian type decoys, disguised as tourists, was required to allow the arrest of the culprit. The individual, living in Holland, was taking the train from Amsterdam to Brussels (Brussels-South station) every Friday. Then he committed his theft and returned in the Netherlands in the same evening. He was apprehended in possession of biscuits, whose analysis showed the presence of flunitrazepam.

5. Conclusion

Flunitrazepam is known as “the date rape pill” and is used here for the theft. The originality of our work lies in the observation of a series of fairly stereotypical poisoning by this drug, made by an individual to deprive a targeted population of Asian travellers. With the development of such criminal practice, the staff of Department of Emergency, where victims are often brought, must be aware of this form of chemical submission and remain vigilant. If repetition of similar cases aroused our attention in this case, isolated misdeeds of a similar nature may be less easily identified.

Conflict of interest

None declared.

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Ethical approval

None declared.

Appendix

Table 3

Laboratory data.

Patient	Glucose Mg/dl (70–110)	Ethanol g/l (<0.1)	Flunitrazepam µg/l Th: 5–15 Tx: >50	Other substance
1	93	0	–	
2	103	–	+	
3	–	–	–	
4	88	<0.1	42	Dihydrocodeine
5	107	<0.1	65	
6	125	<0.1	31	
7	103	<0.1	52	
8	104	<0.1	21	
9	–	–	–	
10	109	<0.1	37	Bromazepam
11	97	–	24	
12	86	<0.1	40	Bromazepam
13	93	<0.1	51	
14	84	<0.1	39	
15	125	0.45	62	
16	104	–	75	

Th: therapeutic plasma levels; Tx: toxic plasma levels; Other substance: other substance identified by toxicological analysis.

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